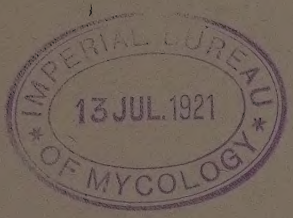
1916

FLORA W. PATTERSON.

COMMON DISEASES OF THE GRAPE Index-Catal.

Mel. T. Cook



INDEXED. PATH. COLL.

NEW JERSEY

AGRICULTURAL

Experiment Stations

CIRCULAR 55

NEW BRUNSWICK, N. J.

NEW JERSEY

AGRICULTURAL EXPERIMENT STATIONS

CIRCULAR 55

Common Diseases of the Grape.*

Grape growing is one of the minor fruit industries in New Jersey, but the fact that there are several vineyards of importance in the southern part of the State, and that a very large percentage of the people of both country and town grow a few vines for their own use, makes it very desirable that some attention should be given to this subject. Grapes are very generally subject to certain very common and well known diseases which have been the cause of many inquiries to the Department of Plant Pathology of the New Jersey Agricultural Experiment Station. The great number of these inquiries has resulted in the preparation of this circular.

BLACK ROT (*Guignardia bidwellii*) is the most common and most destructive of these diseases. It is a fungus disease which causes nearly circular, brown, rotten spots on the fruit, gradually spreading to the entire fruit, causing it to become black. Many of these rotten fruits drop, but others cling to the vine, become dry and shriveled and show many minute black pin point elevations. The disease also attacks the leaves, tendrils and new growths causing black spots in which may be found small elevations similar to those on the fruit. The spores or fruit of the fungus are produced in the small elevations referred to above. These spores are forced out and scattered to other parts of the plant on which they germinate, and give rise to new infections.

This disease is very severe on the Concord and many other varieties. It can be controlled by spraying with Bordeaux mixture as indicated in the calendar. The old prunings should also be burned. The fastening of paper bags over the young bunches early in the season and thus protecting them from infection is very satisfactory where the grower has but one or two vines so situated that they cannot be sprayed to an advantage.

---

*Prepared by Mel. T. Cook, Ph. D., Plant Pathologist, New Jersey Agricultural Experiment Station, January 15, 1916.

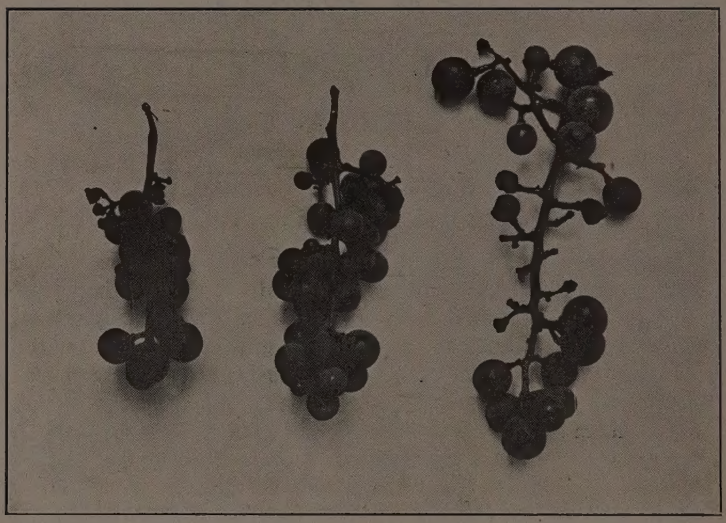


Fig. I Black Rot

Fig. II Hail-Stone Injury

Downy Mildew (*Plasmopara viticola*) is also a fungus disease which is second in importance. It is most abundant on the leaves but also attacks the fruit of some varieties. On the upper surface of the leaves, it appears as yellowish spots of various sizes and forms, later becoming brown. On the under surface of the leaf these spots are at first whitish, owing to the presence of the fungus, but later become brownish. In severe cases the leaves dry and fall prematurely. It sometimes attacks the young fruits, causing a grayish or brownish colored coating, and prevents their growth and maturity.

This disease can be controlled by spraying with Bordeaux mixture as indicated in the calendar.

Dead Arm (*Cryptosporella viticola*) is a fungus disease which is occasionally reported to this Station. Although it has not as yet proved a serious disease in New Jersey, the wide range of the reports indicates that it is widely distributed and that it may become serious at any time. Practically all the complaints to this office have come in the spring and in all cases the entire vine had apparently died very quickly. But it is probable that the vine had been affected with the disease for several months. The stems and trunk show a dry heart rot and frequently crack. Small reddish-brown or black spots are formed on the new green growth and these also show V-shaped slits. The disease is said to attack the fruit causing a rot very similar to the black rot.

The only satisfactory treatment is the digging out and burning of the diseased vines. The spraying of healthy vines as indicated in the calendar is a good protective measure against the spread of the disease, but will be of no value to vines already affected.

Anthracnose (*Gloeosporium ampelophagum*) is a rare fungus disease attacking fruit, leaf and stem. On the fruit it causes ashy brown spots with sunken centers and red or purple borders from which it is frequently called the "bird's-eye rot". On the leaves and new shoots it causes spots with pale, ashy centers and brown-reddish borders.

Fortunately this disease is rare in New Jersey. It is rather difficult to control. The diseased parts should be cut out and burned as soon as they can be detected, and the usual spray treatment followed.

Bitter Rot (*Glomerella ruformaculans*). This is a disease

caused by the same fungus that causes the bitter rot of the apple (See New Jersey Circular 44). Another bitter rot disease, caused by an entirely different fungus (*Melanconium fullgineum*) is occasionally found in New Jersey. These two diseases are of very little importance and can be controlled by the regular spray treatment.

Powdery Mildew (*Uncinula necator*) is a fungus disease quite different from the downy mildew previously referred to. It attacks fruit and leaves but is of very little importance in New Jersey.

Leaf Spot (~~*Leaiosphs*~~ *Isariopsis clavispora*) is a fungus disease of the leaves causing symptoms very similar to the downy mildew. It has been found in one vineyard of the State and appears to be of very little importance.

Crown Gall (*Pseudomonas tumefaciens*) is a bacterial disease causing knots on the roots of the vines and sometimes on the parts above ground. It is said to be very serious in some parts of the country. We have found some few cases in this State where it was apparently causing the death of individual vines. This disease attacks a large number of other plants. (Descriptions will be found in Circulars 34, 35, 44 and 45 of the New Jersey Agricultural Experiment Station).

Spray Calendar.

Spray with Bordeaux mixture 5-5-50. (For instructions for making Bordeaux mixture see Circular 48 of the New Jersey Agricultural Experiment Station).

First Treatment:—Soon after the first leaves appear.

Second treatment:—Soon after the blossoms fall.

Additional treatments:—Every ten days or two weeks until about August 10th. The frequency of these treatments will depend on the weather; in wet weather it will be necessary to give more treatments than in dry weather.

The spray should be applied with a pressure of 80 to 100 pounds.

Note:—When the disease is very severe, it is wise to spray the vines the following year before the leaves appear; or to spray soon after the first leaves appear and again before blooming.

Caution: Improperly made Bordeaux mixture will burn the foliage.

Grape Spraying Experiments in 1915.

The numerous complaints concerning the losses of grapes due to "black rot" led to the conducting of a series of experiments in 1915 in the vineyard of Dr. T. Franklin Gifford at Glassboro. It was found that the general practice of the grape growers in New Jersey was to begin spraying not earlier than June 15th. The writer was of the opinion that much of the difficulty could be overcome by beginning the spray treatments early in May.

The vineyard selected was well cared for and in a high state of cultivation. The black rot had been prevalent in preceeding years and the owner was provided with the necessary equipment for spraying.

The vineyard was divided into three plots, two of which were sprayed with Bordeaux mixture, May 1st and 3rd, and the central plot left unsprayed. All these plots were sprayed June 17th and 18th, July 2nd and 3rd, July 16th and 17th, and July 20th and 21st and August 15th and 16th in accordance with the usual practice of Dr. Gifford. The object of the experiment was to determine the advantages of the early treatment.

The vines made a luxuriant growth; the black rot appeared early, was distributed throughout the vineyard and would have caused a heavy loss if it had not been for the continuous spraying as indicated above.

At the time of harvest sixteen rows were selected for measurement; four rows from each of the two plots which had received the extra spraying and two groups of four rows each from the central plot which had not received the extra treatment. These groups of four rows each will be designated as plots I, II, III, IV. Plots I and IV received the extra treatment, while Plots II and III did not. There was a space of six rows between Plots I and II, four rows between Plots II and III, and six rows between Plots III and IV. The results are as follows:

Plot I —Extra spraying—yield of 64 baskets.
Plot II—No extra spraying—yield of 47 baskets.
Plot III—No extra spraying—yield of 36 baskets.
Plot IV—Extra spraying—yield of 69 baskets.

Plots I and IV, which received the additional treatment, yielded

an average of 66½ baskets, while the yield for Plots II and III, which did not receive this treatment, averaged 41½ baskets; an increase in yield of 25 baskets.

The difference in yield between the two treated plots was only 5 baskets and between the two untreated plots only 11 baskets as compared with the average difference of 25 baskets between the treated and untreated plots.

Although the experiment was on a small scale it is indicative of the advantages of the early treatment.